

What is claimed is:

1. A display driver which drives a plurality of data lines arranged in columns, the data lines intersecting a plurality of scanning lines arranged in rows, and the display driver comprising:

a front drawing row designation register which designates one of the scanning lines as a front drawing row;

a partial mode setting register which sets for the scanning lines either a normal display mode in which a drive voltage depending on gray-scale data is supplied to at least one of the data lines, or a partial non-display mode in which a partial non-display voltage is supplied to at least one of the data lines;

a data line driver circuit including an operational amplifier section which drives at least one of the data lines based on the drive voltage, and a partial non-display voltage output section which drives at least one of the data lines based on the partial non-display voltage; and

a partial display control section which controls driving of the data line driver circuit,

wherein, when part of the scanning lines which are drawing rows including the front drawing row are set to the normal display mode, the partial display control section drives at least one of the data lines by using the operational amplifier section based on the drive voltage, in a select period of the scanning lines; and

wherein, when part of the scanning lines which are the drawing rows are set to the partial non-display mode, the partial display control section limits or stops an operating current of the operational amplifier section, and drives at least one of the data lines by using the partial non-display voltage output section based on the partial non-display voltage, in a select period of the scanning lines.

2. The display driver as defined in claim 1, wherein:

the partial mode setting register sets each of a plurality of blocks into which the scanning lines are divided, to one of the normal display mode and the partial non-display mode;

5 when one of the blocks having part of the scanning lines which are drawing rows including the front drawing row is set to the normal display mode, the partial display control section drives at least one of the data lines by using the operational amplifier section based on the drive voltage, in a select period of the scanning lines; and

10 when one of the blocks having part of the scanning lines which are the drawing rows is set to the partial non-display mode, the partial display control section limits or stops an operating current of the operational amplifier section, and drives at least one of the data lines by using the partial non-display voltage output section based on the partial non-display voltage, in a select period of the scanning lines.

15 3. The display driver as defined in claim 1, further comprising:

a drawing row counter which increments a drawing row counter value based on a horizontal synchronization signal which defines a horizontal scanning period,

wherein the drawing rows including the front drawing row are determined by using the drawing row counter value.

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4. The display driver as defined in claim 2, further comprising:

a drawing row counter which increments a drawing row counter value based on a horizontal synchronization signal which defines a horizontal scanning period,

25 wherein the drawing rows including the front drawing row are determined by using the drawing row counter value.

5. The display driver as defined in claim 3, further comprising:

a back porch counter which resets a back porch counter value based on a vertical synchronization signal which defines a vertical scanning period, and increments the back porch counter value based on the horizontal synchronization signal; and

a comparator which compares a value set by the front drawing row designation register with the back porch counter value,

wherein the drawing row counter resets the drawing row counter value by using a back porch finish signal, and increments the drawing row counter value based on the horizontal synchronization signal, the back porch finish signal being generated based on a signal which is output when the value set by the front drawing row designation register coincides with the back porch counter value.

6. The display driver as defined in claim 4, further comprising:

a back porch counter which resets a back porch counter value based on a vertical synchronization signal which defines a vertical scanning period, and increments the back porch counter value based on the horizontal synchronization signal; and

a comparator which compares a value set by the front drawing row designation register with the back porch counter value,

wherein the drawing row counter resets the drawing row counter value by using a back porch finish signal, and increments the drawing row counter value based on the horizontal synchronization signal, the back porch finish signal being generated based on a signal which is output when the value set by the front drawing row designation register coincides with the back porch counter value.

7. The display driver as defined in claim 1,

wherein the partial non-display voltage is a voltage based on a most significant bit of the gray-scale data.

8. The display driver as defined in claim 2,  
wherein the partial non-display voltage is a voltage based on a most significant  
bit of the gray-scale data.

5 9. The display driver as defined in claim 3,  
wherein the partial non-display voltage is a voltage based on a most significant  
bit of the gray-scale data.

10. The display driver as defined in claim 4,  
10 wherein the partial non-display voltage is a voltage based on a most significant  
bit of the gray-scale data.

11. The display driver as defined in claim 5,  
wherein the partial non-display voltage is a voltage based on a most significant  
15 bit of the gray-scale data.

12. The display driver as defined in claim 6,  
wherein the partial non-display voltage is a voltage based on a most significant  
bit of the gray-scale data.

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13. A display device comprising:  
a plurality of scanning lines arranged in rows;  
a plurality of data lines arranged in columns and intersecting the scanning  
lines;

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a plurality of pixels,  
the display driver as defined in claim 1 which drives the data lines; and  
a scanning driver which scans the scanning lines.

14. A display device comprising:

a display panel which includes a plurality of scanning lines arranged in rows, a plurality of data lines arranged in columns and intersecting the scanning lines, and a plurality of pixels;

the display driver as defined in claim 1 which drives the data lines, and  
a scanning driver which scans the scanning lines.

15. A display drive method which drives a plurality of data lines arranged in columns, the data lines intersecting a plurality of scanning lines arranged in rows, and the display driver comprising:

designating one of the scanning lines as a front drawing row;

driving at least one of the data lines by using an operational amplifier section based on a drive voltage, in a select period of the scanning lines, when part of the scanning lines which are drawing rows including the front drawing row are set to a normal display mode; and

limiting or stopping an operating current of the operational amplifier section, and driving at least one of the data lines by using a partial non-display voltage output section based on a partial non-display voltage, in a select period of the scanning lines, when part of the scanning lines which are the drawing rows are set to a partial non-display mode.

16. The display drive method as defined in claim 15, wherein:

each of a plurality of blocks into which the scanning lines are divided is set to one of the normal display mode and the partial non-display mode;

when one of the blocks having part of the scanning lines which are drawing rows including the front drawing row is set to the normal display mode, the operational

amplifier section drives at least one of the data lines based on the drive voltage, in a select period of the scanning lines; and

when one of the blocks having part of the scanning lines which are the drawing rows is set to the partial non-display mode, the operational amplifier section limits or stops an operating current, and the partial non-display voltage output section drives at least one of the data lines based on the partial non-display voltage, in a select period of the scanning lines.

17. The display drive method as defined in claim 15,

wherein the drawing rows including the front drawing row are determined by using a drawing row counter value which is incremented based on a horizontal synchronization signal which defines a horizontal scanning period.

18. The display drive method as defined in claim 16,

wherein part of the scanning lines which are the drawing rows including the front drawing row are determined by using a drawing row counter value which is incremented based on a horizontal synchronization signal which defines a horizontal scanning period.

19. The display drive method as defined in claim 17, further comprising:

resetting a back porch counter value based on a vertical synchronization signal which defines a vertical scanning period, and incrementing the back porch counter value based on the horizontal synchronization signal;

comparing a value set by the front drawing row designation register with the back porch counter value; and

resetting the drawing row counter value by using a back porch finish signal, and incrementing the drawing row counter value based on the horizontal

synchronization signal, the back porch finish signal being generated based on a signal which is output when the value set by the front drawing row designation register coincides with the back porch counter value.

5     20.     The display drive method as defined in claim 18, further comprising:

              resetting a back porch counter value based on a vertical synchronization signal which defines a vertical scanning period, and incrementing the back porch counter value based on the horizontal synchronization signal;

              comparing a value set by the front drawing row designation register with the  
10     back porch counter value; and

              resetting the drawing row counter value by using a back porch finish signal, and incrementing the drawing row counter value based on the horizontal synchronization signal, the back porch finish signal being generated based on a signal which is output when the value set by the front drawing row designation register  
15     coincides with the back porch counter value.

21.     The display drive method as defined in claim 15,

              wherein the partial non-display voltage is a voltage based on a most significant bit of the gray-scale data.

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22.     The display drive method as defined in claim 16,

              wherein the partial non-display voltage is a voltage based on a most significant bit of the gray-scale data.

25     23.     The display drive method as defined in claim 17,

              wherein the partial non-display voltage is a voltage based on a most significant bit of the gray-scale data.

24. The display drive method as defined in claim 18,  
wherein the partial non-display voltage is a voltage based on a most significant  
bit of the gray-scale data.

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25. The display drive method as defined in claim 19,  
wherein the partial non-display voltage is a voltage based on a most significant  
bit of the gray-scale data.

10 26. The display drive method as defined in claim 20,  
wherein the partial non-display voltage is a voltage based on a most significant  
bit of the gray-scale data.